

CLASS EXERCISES

Determine whether each statement is true or false. If a statement is false, correct it to make it true.

1. The index in $\sqrt{3}$ is 3.
2. The radicand in $\sqrt[5]{32}$ is $\sqrt[5]{32}$.
3. The index in $\sqrt{5x^4}$ is 2.
4. The radicand in $\sqrt[4]{x^8y^4}$ is x^8y^4 .
5. $\sqrt[6]{-1}$ is a real number.
6. $\sqrt[3]{10x^2}$ is a radical expression.
7. $\sqrt[5]{0}$ is not a real number.
8. $\sqrt[4]{-16x^8}$ is not a real number.

Predict the number of real solutions for each equation.

9. $3x^2 + 10 = 8$
10. $5x^3 - 6 = -6$
11. $x^4 = 1$

PRACTICE EXERCISES

Find the real solutions, if any, for each equation.

1. $x^2 = 100$
2. $3x^2 = 75$
3. $m^2 - 36 = 0$
4. $m^2 - 4 = 12$
5. $y^2 + 12 = 3$
6. $5y^2 = -30$
7. $4x^3 = 32$
8. $x^4 + 81 = 0$
9. $5x^3 + 16 = 16$
10. $2x^2 - 50 = 0$
11. $y^3 = -216$
12. $2x^4 - 32 = 0$

Simplify each radical expression if it is a real number.

13. $\sqrt{36}$
14. $-\sqrt{36}$
15. $\pm\sqrt{36}$
16. $\sqrt{0.36}$
17. $\sqrt{-1}$
18. $\sqrt{100}$
19. $-\sqrt{121}$
20. $\sqrt{-81}$
21. $\sqrt[3]{64}$
22. $\sqrt[3]{-64}$
23. $\sqrt{16x^2}$
24. $\sqrt{0.25x^6}$
25. $\sqrt{x^8y^{18}}$
26. $\sqrt{x^{10}y^{100}}$
27. $\sqrt{x^{80}y^{50}}$
28. $\sqrt{64b^{48}}$
29. $\sqrt{121a^{90}}$
30. $-\sqrt{81c^{48}d^{64}}$
31. $\sqrt{64x^{36}y^{96}}$
32. $\sqrt[3]{-64a^{81}}$
33. $\sqrt[5]{32y^{25}}$
34. $\sqrt[7]{x^{14}y^{35}}$
35. $\sqrt{0.0064x^{40}}$
36. $-\sqrt[3]{0.000027y^{33}}$
37. $\sqrt{(x+3)^2}$
38. $\sqrt{(x+1)^4}$
39. $\sqrt[3]{(x-5)^6}$
40. $\sqrt[3]{(x-2)^9}$
41. $\sqrt[3]{(x^2-8x+16)^9}$
42. $-\sqrt[4]{(x^2+2x+1)^8}$
43. $\pm\sqrt[11]{-m^{33a}}$
44. $\sqrt{25p^{4c-2}}$
45. $\sqrt[6]{64q^{12a+54}}$
46. $\sqrt{x^{4a+16}}$
47. $\sqrt[3]{s^{3n}}$
48. $\sqrt[n]{r^n}$
49. $\sqrt[n]{(p+q)^n}$